

## 2.1 Inductive Reasoning and Conjecture

Conjecture-educated guess based on known information

Inductive reasoning-reasoning using a # of examples to make a prediction

Oct 1-7:06 AM

Oct 1-7:09 AM

### Patterns:

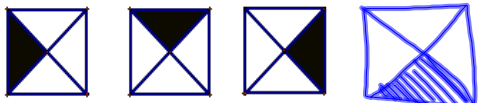
Ex 1:  $1, 3, 6, 10, 15, \underline{21}$

Ex 2: A, B, B, C, C, C, D, D, D, D, E, E, E, E, E

Ex 3:  $1 \times 9 + 2 = 11$   
 $12 \times 9 + 3 = 111$   
 $123 \times 9 + 4 = 1111$

$1234 \times 9 + 5 = 11,111$

Ex 4: 3, 5, 7, 9 odd  
 3, 5, 7, 11 prime

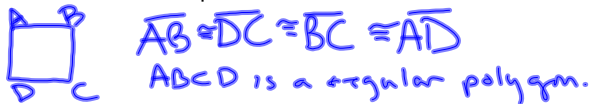
Ex 5: 

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Make a conjecture based on the given information.

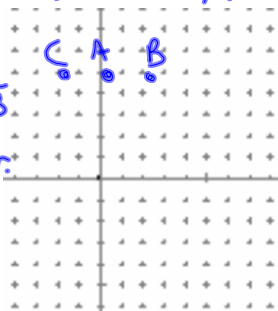
Ex 6: ABCD is a square



Ex 7: A(0,5) B(2, 5) C(-2, 5)

$$CA = AB \quad \overline{CA} \cong \overline{AB}$$

C, A, B are collinear.



Counterexample-one false example that shows a conjecture is not true

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Determine whether each conjecture is true or false. Give a counterexample for any false conjecture.

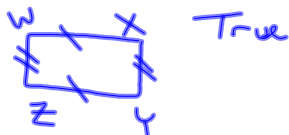
8. Given:  $x$  is an integer.

Conjecture:  $-x$  is negative.

False ex:  $x = -6$   
 $-x = 6$

9. Given: WXYZ is a rectangle.

Conjecture:  $WX = YZ$  and  $WZ = XY$



Make a conjecture about the next item in each sequence.



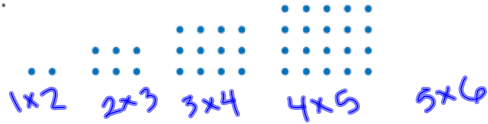
5.  $-8, -5, -2, 1, 4$

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Make a conjecture about the next item in each sequence.

11.



13. 1, 2, 4, 8, 16   32  
                    x2

15.  $\frac{1}{3}, 1, \frac{5}{3}, \frac{7}{3}, 3$     $\frac{11}{3}$   
                                    +  $\frac{2}{3}$

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Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

29. Given:  $\angle 1$  and  $\angle 2$  are complementary angles.

Conjecture:  $\angle 1$  and  $\angle 2$  form a right angle.

30. Given:  $m + y \geq 10, y \geq 4$

Conjecture:  $m \leq 6$

$m = 7$   
 $7 + 4 \geq 10 \checkmark$



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Classwork--10minutes

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#s 12, 14, 16, 24,

29, 31, 33, 34, 35

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